

PCT

WORLD INTELLECTUAL PROPERTY ORGANIZATION  
International Bureau



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification <sup>6</sup> : H04H 1/00, 1/08, H04L 12/16, 12/18, H04Q 7/20, H04B 7/26		A1	(11) International Publication Number: <b>WO 97/41654</b> (43) International Publication Date: 6 November 1997 (06.11.97)
(21) International Application Number: PCT/AU97/00260 (22) International Filing Date: 29 April 1997 (29.04.97)		(81) Designated States: AU, CA, US, European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).	
(30) Priority Data: PN 9550 29 April 1996 (29.04.96) AU		Published <i>With international search report.</i>	
(71) Applicant (for all designated States except US): TELEFON- AKTIEBOLAGET LM ERICSSON [SE/SE]; Telefonplan, S-126 25 Stockholm (SE).			
(72) Inventors; and (75) Inventors/Applicants (for US only): TSOUKAS, George, James [AU/AU]; 1/42 Taylor Street, North Fitzroy, VIC 3068 (AU). McLORINAN, Andrew, George [AU/AU]; 20 Barrett Street, Hampton, VIC 3188 (AU).			
(74) Agent: CARTER SMITH & BEADLE; Qantas House, 2 Railway Parade, Camberwell, VIC 3124 (AU).			
(54) Title: TELECOMMUNICATIONS INFORMATION DISSEMINATION SYSTEM			
(57) Abstract			
<p>A method and system for disseminating information to subscribers of a mobile telecommunications network (30) from at least one information source (20) containing data which is updated continuously or at intervals. The system includes a message distribution centre (10) connected to at least one information source (20) and arranged to process the data to generate information messages for a particular subscriber in accordance with a customer-defined profile of the subscriber, the information messages being transmitted to the subscriber's mobile terminal (32) in the form of short message service (SMS) text messages. The information messages may be transmitted at predetermined times, or upon the occurrence of a predetermined event or may be dependent upon the subscriber's location. A particular subscriber may also request information from the information source (20) at any time, from any location or based on an event and receive the information, as well as the above-mentioned information messages, in a menu-driven format.</p>			

**FOR THE PURPOSES OF INFORMATION ONLY**

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
AU	Australia	GA	Gabon	LV	Latvia	SZ	Swaziland
AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
BA	Bosnia and Herzegovina	GE	Georgia	MD	Republic of Moldova	TG	Togo
BB	Barbados	GH	Ghana	MG	Madagascar	TJ	Tajikistan
BE	Belgium	GN	Guinea	MK	The former Yugoslav Republic of Macedonia	TM	Turkmenistan
BF	Burkina Faso	GR	Greece	ML	Mali	TR	Turkey
BG	Bulgaria	HU	Hungary	MN	Mongolia	TT	Trinidad and Tobago
BJ	Benin	IE	Ireland	MR	Mauritania	UA	Ukraine
BR	Brazil	IL	Israel	MW	Malawi	UG	Uganda
BY	Belarus	IS	Iceland	MX	Mexico	US	United States of America
CA	Canada	IT	Italy	NE	Niger	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NL	Netherlands	VN	Viet Nam
CG	Congo	KE	Kenya	NO	Norway	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NZ	New Zealand	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's Republic of Korea	PL	Poland		
CM	Cameroon	KR	Republic of Korea	PT	Portugal		
CN	China	KZ	Kazakhstan	RO	Romania		
CU	Cuba	LC	Saint Lucia	RU	Russian Federation		
CZ	Czech Republic	LI	Liechtenstein	SD	Sudan		
DE	Germany	LK	Sri Lanka	SE	Sweden		
DK	Denmark	LR	Liberia	SG	Singapore		
EE	Estonia						

**TELECOMMUNICATIONS INFORMATION DISSEMINATION SYSTEM**

This invention relates to telecommunications information broadcast services and particularly, but not exclusively, relates to the dissemination of information to subscribers of a mobile telecommunications network.

5 Various information sources or databases contain data or information which is updated substantially continuously or at regular intervals, for instance stock-market databases, traffic information, sports information and betting services. Such information services, however deliver a continuous feed of information which cannot be tailored to a particular subscriber's requirements.

10 It is also possible for subscribers of a mobile telecommunications network to use a telecommunications service to access certain information in such databases. These services, however require the subscriber to initiate the delivery of the information, e.g. by a dial-up service.

International Patent Application No. PCT/CA94/00332 discloses a system for  
15 transmitting messages to screen-based devices, such as PCs, over a public switched telephone network (PSTN) and using stored program controlled switches (SPCS). A unique connection must be established, through the SPCS, to each screen-based device that is targeted for delivery of the messages. The messages are informational, promotional and/or advertisements that are based on consumer  
20 demographics or buying behaviour and are delivered non-intrusively to pre-determined screen-based devices at particular intervals. After viewing a message, a consumer can contact a marketer directly to find out more information or order merchandise in the consumer's locality and the response is recorded as a statistic for the direct marketer. The disclosed system, however, does not provide  
25 information to a subscriber based on an event or on the user's location in accordance with the subscriber's profile which is stored and customised by the particular subscriber. Furthermore, real-time information is not provided intrusively to the subscriber based on an information source that is updated continuously.

It is therefore desirable to provide an enhanced telecommunications system  
30 for disseminating information to subscribers of the system in which at least some

of the disadvantages of known systems are alleviated.

It is also desirable to provide a method of, and apparatus for, disseminating information from at least one database which is updated substantially continuously to subscribers of a mobile telecommunications network.

5 It is further desirable to provide a system for disseminating information to subscribers of a mobile telecommunications network which can utilise existing network equipment.

According to one aspect of the invention there is provided a method of disseminating information from at least one information source containing data 10 which is updated continuously or at intervals to subscribers of a telecommunications network comprising the steps of:

storing customer-defined profiles of subscribers of the network;  
receiving, at a message distribution centre, data from said information source which is updated continuously or at intervals;  
15 processing said data to produce information messages for particular subscribers in accordance with a stored customer-defined profile of each subscriber;  
transmitting said information messages to particular subscribers in accordance with the stored customer-defined profile of each subscriber.

According to another aspect of the invention, there is provided a system for disseminating information to subscribers of a telecommunications network comprising a message distribution centre connected to or including at least one information source containing data which is updated substantially continuously or at intervals; a database of stored customer-defined profiles of subscribers of the network; wherein the message distribution centre includes service processing means 20 for accessing the database of stored customer-defined profiles and arranged to process data from said at least one information source to generate information messages for a particular subscriber in accordance with the customer-defined profile of said subscriber; and message processing means for transmitting the information messages to the subscribers.

25 The information messages may be transmitted to particular subscribers at predetermined times and/or upon occurrence of predetermined events which are

triggered in accordance with the customer-defined profile of each particular subscriber. The information messages may also be location dependent upon the location of the subscriber's mobile apparatus. For instance, a subscriber may request, in his or her customer profile, for time-dependant information messages, 5 e.g. on particular stocks and shares, stock-market indices or currencies, or traffic alerts affecting a predetermined route, to be sent at predetermined times, e.g. at a certain hour each weekday. Alternatively, or additionally, the subscriber may request to receive event and/or location dependant information messages when a predetermined event occurs, or when the subscriber's mobile apparatus is at a 10 particular location e.g. when a certain stock, index or exchange rate either reaches a certain value or fluctuates by a predetermined percentage or when a traffic alert occurs affecting the subscriber's route at a particular location. It will, however, be appreciated that the present invention is not limited to the dissemination of financial information such as stocks and shares, and may have other applications, for instance 15 in providing betting services and information on sporting events.

The information messages are preferably transmitted via a mobile telecommunications network carrier to subscribers of the mobile network equipped with mobile terminals such as mobile telephones or pagers. The information messages are preferably transmitted in the form of SMS (Short Message Service) 20 text messages. The SMS in a mobile telecommunications network enables a subscriber to receive a text message on a mobile terminal. Hitherto, the SMS facility in mobile terminals has been used to receive paged messages, but subscribers have not been able to receive information messages from information sources containing data which are constructed in accordance with a customer-defined profile of the subscriber. 25

According to a further aspect of the invention, there is provided apparatus for disseminating information from at least one information source containing data which is updated continuously or at intervals to subscribers of a mobile telecommunications network, comprising service processing means for receiving 30 data from said at least one information source and for accessing a database of stored customer-defined profiles, said service processing means being arranged to

process data received from said at least one information source to generate information messages for a particular subscriber in accordance with the customer-defined profile of said subscriber; and message processing means for transmitting the information messages to the subscribers in the form of Short Message Service

5 (SMS) text messages for reception by mobile terminals of the subscribers.

An information messages is preferably sent from the message processing means to a subscriber's terminal via a Short Message Service centre (SMS-C). In Australia and many other countries, most mobile telecommunications carriers use an Internationally recognised system for mobile telecommunications known as

10 Global System for Mobiles (GSM), which provides the facility to send text messages, usually paging messages, to a subscriber. The present invention is applicable to the SMS of GSM and also to similar Short Message Services in other mobile telecommunications systems such as the Digital American Mobile Phone Service (D-AMPS) used in the U.S.A.

15 When there are several mobile telecommunications systems carriers, (e.g. Telstra, Optus and Vodafone in Australia), the message processing means may comprise a plurality of message processors, one for each SMS carrier.

The service processing means may be arranged to generate time-dependant, location-dependant and/or event dependant messages in accordance with the

20 customer profile of a subscriber. Preferably, the message distribution centre or apparatus includes timing means, such as a real-time clock, for passing real time signals to the service processing means. The real-time signals may be used by the service processing means to trigger the generation of time-dependant messages, or for timing a predetermined period for the evaluation of a trigger for event-

25 dependant or location-dependant messages. The message distribution centre or apparatus preferably includes memory means for storing data received from the at least one information source. The memory means may store current data and previous data for comparison purposes by the service processing means in determining whether an event-dependant message should be generated.

30 In a preferred embodiment, the service processing means may comprise a plurality of service processors to receive data from an equivalent number of

information sources so that a wide variety of information services can be made available for subscribers. The or each service processor is preferably connected to a profile management system which includes or is connected to a customer database containing the customer profiles. The customer database may be maintained 5 separately from the message distribution centre or apparatus containing the service processing means and the message processing means, for instance at a telemarketing centre. The system or apparatus may also include means for connecting the message distribution centre and/or the customer database to the Internet, for instance a World Wide Web Server, so that a subscriber can enter or change details 10 of his or her customer profile via the Internet.

According to a further aspect of the invention there is provided a system for disseminating information from at least one information source containing data to subscribers of a mobile telecommunications network, comprising:

15 location determining means for determining the location of mobile terminals of particular subscribers of the network;

20 a message distribution centre connected to or including at least one information source containing data, wherein the message distribution centre includes service processing means for receiving and processing data from said at least one information source to generate location-dependent messages for particular subscribers in accordance with the location of the particular subscribers; and

message processing means for transmitting the information messages to the subscribers.

25 In the various aspects of the invention, information messages may be transmitted in response to requests from particular subscribers on information from said at least one information source, the request being initiated at any time, from any location or based on any event.

For instance, messages may be transmitted in response to a request from a particular subscriber for information associated with his/her location at the time the request is made.

30 The system or apparatus may deliver the event-dependent, location-dependent and/or time dependent messages to the subscriber in a menu driven format. The

menus will be generated by the service processing means in accordance with the customer-defined profile of the subscriber. The menu or menus provide a number of options appropriate to the needs of the subscriber, which options can be selected by the subscriber to obtain more information on a particular item or feature.

5 The system or apparatus may also provide menus to the subscriber in response to a query from the subscriber, the menus being arranged by the service processing means into appropriate options based on the query.

Further details and features of a preferred embodiment of the present invention will now be described, by way of example only, with reference to the  
10 accompanying drawings in which:-

Figure 1 is a schematic diagram of a system for disseminating information in accordance with the invention;

Figure 2 is a block diagram of the message distribution centre of Figure 1;

15 Figure 3 is a flowchart showing the processing of a time-dependent message for transmission to a subscriber;

Figure 4 is a flowchart showing the processing of an event-dependent message for transmission to a subscriber.

The system for disseminating information shown in Figure 1 comprises a message distribution centre 10 connected to a plurality of information sources 20 comprising databases 22 which contain data or information which is updated substantially continuously or at intervals, for instance, stock-market information, lottery results, banking and other financial services, sports information, betting services and traffic information. The message distribution centre (MDC) 10 is also connected via a service connection 24 (e.g. the AUSTPAC X.25 network in  
25 Australia) to a plurality of mobile telecommunications network carriers 30, e.g. in Australia Telstra, Optus, Vodaphone, etc., which transmit information messages from the message distribution centre 10 to subscribers of the mobile networks provided with mobile terminals 32 which can receive short messages in text form via a short message service (SMS) provided from a short message service centre  
30 (SMS-C) 34 of the network carrier.

In the system of Figure 1, the message distribution centre 10 is connected,

for instance by a dedicated leased telephone line PPP DXL, to a telemarketing centre 40 which provides customer and service administration, including the handling of charging and billing records, customer registration and enquires, and customer requests to change their individual customer profiles. The system may 5 also include a World Wide Web (WWW) server 50 allowing subscribers provided with personal computers (PCs) 52 to interact with the message distribution centre 10 via the Internet. This allows subscribers to perform such activities as on-line registration and service selection, customer profile administration, billing and service enquires and ad-hoc message transmission.

10 Each telecommunications network 30 has a USSD facilitating node 36 which is an interface that facilitates dialogue and the transmission of Unstructured Supplementary Services Data (USSD) between a subscriber of that particular network and the message distribution centre 10. One type of USSD facilitating node which may be used in the present invention is Ericsson's Enhanced Services 15 Node (ESN). The node 36 enables messages to be sent and received between the MDC and the subscriber and enables menus to be received by the subscriber. The subscriber can respond by selecting one or more options from the menus depending on the circumstances of the subscriber or in accordance with the subscriber profile. The menus are generated by Unstructured Supplementary Services Data (USSD) so 20 that a particular service, as processed by one of the service processors 12, provides the subscriber with a menu structure that is controlled by the subscriber. The USSD utilises the control channel in GSM networks. Each node 36 is linked to a USSD interface or gateway 44 in the MDC 10 which communicates with each of the service processors 12 and profile management system 14. By way of example, 25 a subscriber wishing to know information about a stock will be presented with a menu giving options to find out more information on that stock. Menus can also be downloaded in situations that are location dependent. A mobile terminal locating means, such as Ericsson's Mobile Positioning Centre (MPC) 38, is located in each of the telecommunications networks 30 for determining the location of a 30 subscriber's mobile terminal within the network on a geographic basis. Each MPC is linked to a location processor 46 in MDC 10.

There are a number of known techniques for locating a subscriber's mobile terminal in terms of its longitudinal and latitude including:-

- identifying the base station of the cell to which the subscriber's terminal is closest;
- 5 - comparing the signal strength received by base stations from the terminal over a number of cells;
- using a reference mobile terminal in a particular cell and comparing the signal strengths measured between the reference mobile terminal and the subscriber's terminal; and
- 10 - using the timing advance (TA) technique for GSM networks to determine the distance between the subscriber terminal and the base station of the cell in which the subscriber is located.

Once the subscriber's terminal has been located, the information is forwarded by the MPC 38 to a location processor 46 in the MDC 10.

15 Depending upon the location of a subscriber, i.e. longitude and latitude, and on the subscriber's profile, as determined by the Profile Management System 14, the node 36 will trigger the USSD gateway 44, located in the MDC 10, for the service processors 12 to provide the menu structures for the subscriber. These are called profile generated/intelligent services.

20 Example of location dependent event

A particular subscriber may have a traffic route by which he/she will travel to reach a destination stored in his/her profile and have the service send traffic information on the route at predetermined times. Knowing that the subscriber is on the stored route and the time is for example 8.30am, information about a traffic 25 build-up which is causing delays further along the route can be transmitted to the subscriber in SMS format to alert the subscriber. By using USSD the service can offer a menu of options such as an alternative route, to call somebody to let he/she know that the subscriber will be late for a meeting, or an option to have maps in the subscriber's vicinity, from a directory database, downloaded to the subscriber 30 terminal. More information on each option can be obtained by progressively going through sub-menus.

Alternatively, the system offers the subscriber "go to" services wherein the subscriber can request information at any time whilst travelling, for example, on the above-described route. These services are enabled through the USSD facilitating node 36 and the USSD gateway 44. The information requested by the subscriber and subsequently transmitted to the subscriber is not limited to traffic information but can be from many other databases/sources as previously mentioned. For example, information services that may be requested include:-

(1) emergencies:- If a subscriber's vehicle has broken down, roadside assistance can be requested wherein the location of the subscriber's vehicle is stored in the relevant service processor and in return, information relating to the position of the nearest available roadside assistant is transmitted to the subscriber. Position requests may also be made in relation to the nearest police vehicle/station, ambulance and towing operators.

(2) food service guides:- Based on the location of the subscriber, he or she may request information on the location of nearby restaurants, take-away venues, etc.

(3) tourism/amusements:- Again, based on the location of the subscriber, if there are particular tourist attractions or amusements nearby, then the location of these or the times that they are open/showing may be transmitted to the subscriber's terminal or called on by request from the subscriber who can go through a series of menus on a particular attraction or amusement.

(4) public transport:- Requesting information on taxi services, or booking a taxi, information relating to train and tram timetables for a nearby station/stop or for particular destinations for which train/tram is most feasible to take can be requested or downloaded. Furthermore, information on aircraft such as arrival/departure times and flight numbers of airlines can be requested.

(5) petrol/amenities:- The nearest location of petrol stations, fast food outlets, hotels, pubs, etc can be requested.

Any of the above services can offer the telephone number of the particular item of interest requested by the subscriber, wherein the subscriber is connected through to the requested item and dialogue can take place between the subscriber

and a representative of the relevant party, e.g. an airline reservation number or the telephone number of the nearest police station. Furthermore, the position of the subscriber can be provided to the called party by passing the calling line identification (CLI) number of the subscriber to a location centre or alternatively, 5 by passing on the subscriber location information during the telephone call.

Referring to Figure 2 of the drawings, the message distribution centre 10 includes a plurality of service processors 12 each connected to a respective one of the information sources 20 for receiving data from the databases 22 of the information source 20, a plurality of message processors 13 each connected to a 10 respective one of the short message service centre (SMS-C) 34, and a profile management system 14 connected to a customer database 42 which may conveniently be located at the telemarketing centre 40, or alternatively at the message distribution centre 10.

Each service processor 12 can access the customer database 42 via the profile 15 management system 14 and is arranged to process the data received from the respective information source 20 to produce information messages for individual subscribers in accordance with the particular customer profile of each subscriber which is stored in the customer database 42. Each information message is passed by the service processor 12 to an appropriate message processor 13 which processes 20 the message into an SMS form suitable for handling by the Short Message Service centre 34 of the particular mobile network carrier 30 to which the subscriber is connected. The appropriate message processor 13 for each subscriber is also determined by the service processor from the customer profile of the subscriber stored in the customer database 42. An SMS information message is then 25 transmitted by the SMS-C 34 to a subscriber's mobile terminal 32 which alerts the subscriber to an incoming message by an audible tone and then displays the SMS message in text form on the display of the subscriber's mobile terminal.

The information messages produced by the service processors may be time- 30 dependant, event-dependant or location-dependent. The message distribution centre 10 includes timing means in the form of a real-time clock 15 connected to the service processors 12 so that the service processors 12 can produce the dependant

messages in accordance with the customer profiles of the subscribers. The message distribution centre 10 may also include monitoring means in the form of an alarm monitor 16 for monitoring the performance of the service processors 12, the message processors 13 and the profile management system 14, and for generating 5 audible and/or visual alarm signals when a malfunction occurs.

The operation of the system to produce time-dependant and event-dependant messages will now be described, by way of example only, in connection with a stock market and financial information broadcast service, which is one use of the system. The system will receive a data feed directly from a commercial stock 10 market and financial information source, such as the "DF2" data feed signal provided in Australia by AAP Information Services Pty Ltd (AAP). The DF2 signal contains a large quantity of diverse information which is updated substantially continuously or at regular intervals, including stocks, indices, interest rates, currencies and company news. The information broadcast service will 15 preferably be available to subscribers of a plurality of mobile telecommunications network carriers. In Australia there are currently three main mobile network carriers, Telstra, Optus and Vodafone, each of which use GSM (Global System for Mobile) digital mobile telephone, an Internationally recognised standard digital telephone system which provides a Short Message Service (SMS) facility. Any 20 subscriber of one of the SMS carriers and having the facility to receive SMS text messages on his or her mobile terminal may apply to become a customer of the information broadcast service via the telemarketing centre, or alternatively via the Internet and the World Wide Web Server 50. The telemarketing centre, including the customer database, is set up to manage, maintain and administer customer 25 information, including contact details, billing details and customer specific stock market information selections and related notification and trigger events. Customer administration and service connections, alterations and disconnections may be performed through a front end, PC-based system.

It is envisaged that a range of services will be available to customers, 30 including: Individual stock prices; Indices; Interest Rates; and Currencies.

In order to offer a "personalised" service, each customer's record may have

the option of recording a broker's name and/or telephone number for appendage to the SMS message.

### 1. Individual Stock Prices

5 Customers will be asked to advise the stocks they wish to monitor. Stocks can be nominated by their full/partial name (e.g. Mount Isa Mines), or via their stock code (e.g. MIM). The system should search a valid database of stock codes to ensure valid entries. For each nominated stock, the customer can request one of two service levels; (a) current price, or (b) percentage change from last quote. This procedure will repeat until all stocks have been  
10 nominated by the customer.

(a) current price (time-dependant reporting)

15 For these stocks, the customer can request to receive time-dependant messages at a given delivery frequency and interval. This can consist of any combination of time, time interval or day, and may also exclude days or dates (eg. "not on weekends" or "not on 25th Dec").

*Examples*

- "please send me information at 9am each weekday"
- "Please send me information every hour starting at 9am and finishing at 3pm on weekdays".

20 The way in which time dependant messages may be processed will now be described with reference to the flowchart of Figure 3. The service processor 12 connected to the AAP Information Source receives data from the source which is updated substantially continuously or at regular intervals as indicated by 110. The service processor 12 stores the data received as indicated by 112. The service  
25 processor also accesses customer profiles stored in the customer database 42 via the profile management system 14 as indicated by 114 and compares the stored data from the information source with the customer profiles as indicated by 116. The service processor 12 checks whether a customer has requested information on a

particular stock as indicated by 118. If the customer has not requested information on a stock no message is generated for that stock as indicated by 120. The clock 15 continuously sends real time signals to the service processor (as indicated by 115) and if the customer has requested information on a particular stock, the 5 customer request time (e.g. 9am each weekday) is compared with the real time signal as indicated by 122 to determine whether it is time to send an information message to the customer as indicated by 124. No message is sent (as indicated by 126) until it is time to send a message and then the service processor 12 passes the message to the appropriate message processor 13 for the customer's carrier network 10 as indicated by 128. The message processor then processes the message into the appropriate SMS form for the customer's carrier network and sends the message to the SMS centre 34 as indicated by 130.

(b) percentage change ("event dependant" reporting)

15 For these stocks, a customer may request to receive event-dependant messages by providing a percentage fluctuation amount (positive and/or negative) from a previous quote. This will act as the trigger or event which will spawn a message to be delivered. The customer may also request exclusion times, days, etc as for service (a) above.

*Examples*

20

- "Please notify me when MIM stocks fluctuate by +/- 20% starting from 9am and finishing at 4pm and only on weekdays
- "Please notify me when MIM stocks fluctuate by -20% starting from 9am and finishing at 2pm and only on weekends"

25 The way in which event-dependant messages may be processed will now be described with reference to the flowchart of Figure 4. The service processor 12 connected to the AAP information source continuously receives data from the source as indicated by 210. The service processor stores the current data and previous data as indicated by 212 and receives time signals from the real time clock

15 as indicated by 215 so that is able to compare the current data with the previous data over certain time periods. The service processor 12 also accesses customer profiles stored in the customer database 42 via the profile management system 14 as indicated by 214 and compares the stored data from the information source with 5 the customer profiles as indicated by 116. The service processor checks whether a customer has requested information on a particular stock as indicated by 218. If the customer has not requested information on a stock no message is generated for that stock as indicated by 220. If the customer has requested to receive event-dependant messages on a particular stock, e.g. the customer has requested to be 10 notified if a certain stock fluctuates by more than a predetermined percentage in a predetermined time period, the current data is compared with the previous data for that stock over the requested period as indicated by 222 to ascertain whether the value of the stock has fluctuated by the requested percentage over the requested period as indicated by 224. If so, the service processor 12 passes the information 15 message to the appropriate processor 13 as indicated by 226. Otherwise, no message is produced (220). The message processor 13 for the customer's carrier network then processes the message into an appropriate SMS form for the carrier network and sends the message to the appropriate SMS centre 34 as indicated by 230.

20 2. Indices

The data feed from the Information Source(s) to the service processor(s) may also provide information on stock market indices such as the All Ordinaries Index in Australia, Dow Jones Index, etc. Certain customers may wish to be notified of this information at predetermined time/day intervals. This 25 service is very similar to the stock price service described above. Similar options should be offered to customers.

*Examples*

(a) time dependant

- "Please notify me of the all ordinaries index at 9am and 30 finishing at 4pm each weekday"

15

- "Please notify me of the Dow Jones index at 2 hourly intervals starting at 9am and finishing at 4pm each weekday"

(b) event dependant

5

- "Please notify me when the Dow Jones index fluctuates by more than +/- 20% from the last quote from 9am and finishing at 5pm on weekdays"

Such time dependant and event dependant messages may be processed by the message distribution centre in similar manner to the individual stock information messages 1(a) and 1(b) above as described with reference to Figures 3 and 4.

10 3. **Interest Rates**

An interest rate delivery service may also be provided to deliver nominated interest rates to customers using either predetermined delivery times/intervals or event dependant delivery triggers (as for the services 1 and 2 above)

*Examples*

15

- "Please send me information regarding interest rate 'x' when it fluxuates by 17% on weekdays starting at 10am and finishing at 3pm".

3. **Currencies**

20

A currency delivery service may also be provided to deliver nominated currency figures to customers using either predefined delivery times/intervals or event dependant delivery triggers (as for the services 1 and 2 above)

*Examples*

25

- "Please send me information regarding the current value of the US Dollar at half hourly intervals on weekdays starting at 11am and finishing at 4pm"

Although Figures 3 and 4 relate to the dissemination of stockmarket and financial information, it will be appreciated that many other types of information may be disseminated in the system of the present invention and various other modifications and alterations may be made to the method and system described above without departing from the scope or spirit of the invention.

**Claims**

1. A method of disseminating information from at least one information source containing data which is updated continuously or at intervals to subscribers of a telecommunications network comprising the steps of:
  - 5        storing customer-defined profiles of subscribers of the network;
  - receiving, at a message distribution centre, data from said information source which is updated continuously or at intervals;
  - processing said data to produce information messages for particular subscribers in accordance with a stored customer-defined profile of each subscriber;
- 10      transmitting said information messages to particular subscribers in accordance with the stored customer-defined profile of each subscriber.
2. A method according to claim 1 wherein the information messages are transmitted to a particular subscriber at predetermined times or intervals of time in accordance with the customer-defined profile of said particular subscriber.
- 15      3. A method according to claim 1 wherein the information messages are transmitted to a particular subscriber upon the occurrence of predetermined events which are triggered in accordance with the customer-defined profile of said particular subscriber.
- 20      4. A method according to claim 1 wherein the information messages are transmitted to a particular subscriber dependent upon the location of said particular subscriber in accordance with the customer-defined profile of said particular subscriber.
- 25      5. A method according to any one of the preceding claims wherein the information messages are transmitted in a menu-driven format in accordance with the customer-defined profile of a particular subscriber.

6. A method according to claim 1 wherein the information messages are transmitted in response to a request from a particular subscriber on information from said at least one information source, the request being initiated at any time, from any location or based on an event.

5 7. A method according to claim 6 wherein the information messages are transmitted in a menu-driven format in accordance with said request of the particular subscriber.

8. A method according to any one of the preceding claims wherein the information messages are transmitted via a mobile telecommunications network 10 carrier to subscribers of the network equipped with mobile terminals.

9. A method according to claim 8 wherein the information messages are transmitted in the form of short message service (SMS) text messages.

10. A system for disseminating information to subscribers of a telecommunications network comprising: a message distribution centre connected 15 to or including at least one information source containing data which is updated substantially continuously or at intervals; a database of stored customer-defined profiles of subscribers of the network; wherein the message distribution centre includes service processing means for accessing the database of stored customer-defined profiles and arranged to process data from said at least one information 20 source to generate information messages for a particular subscriber in accordance with the customer-defined profile of said subscriber; and message processing means for transmitting the information messages to the subscribers.

11. A system according to claim 10 wherein the system includes timing means and the information messages are transmitted to particular subscribers at 25 predetermined times or intervals of time in accordance with the customer-defined profile of each particular subscriber.

12. A system according to claim 10 wherein the system includes event-processing means and the information messages are transmitted to particular subscribers upon the occurrence of predetermined events which are triggered in accordance with the customer-defined profile of each particular subscriber.

5 13. A system according to claim 10 wherein the system includes location processing means and the information messages are transmitted to a particular subscriber dependent upon the location of said particular subscriber in accordance with the customer-defined profile of said particular subscriber.

10 14. A system according to any one of claims 10 to 13 wherein the service processing means includes menu-generating means for producing information messages in a menu-driven format for transmission to subscribers of the network.

15. A system according to claim 10 wherein the information messages are transmitted in response to a request from a particular subscriber on information from said at least one information source, the request being initiated at any time, 15 from any location or based on an event.

16. A system according to any one of claims 10 to 15 wherein the information messages are transmitted via a mobile telecommunications network carrier to subscribers of the network equipped with mobile terminals.

20 17. A system according to claim 16 wherein the information messages are transmitted in the form of short message service (SMS) text messages from the message processing means to a subscriber's terminal via a short message service centre (SMS-C).

25 18. A system according to claim 16 or claim 17 wherein the system includes mobile positioning means for determining the location of a subscriber's terminal, said mobile positioning means transmitting the location of a subscriber's terminal

to a location processor in said message distribution centre.

19. A system according to any one of claims 10 to 18 wherein the message distribution centre includes a plurality of service processors to receive data from a corresponding number of information sources.

5 20. A system according to any one of claims 10 to 19 wherein the or each service processor is connected to a profile management system which includes or is connected to a customer database containing the customer-defined profiles.

21. A system according to any one of claims 10 to 20 for transmitting information to subscribers of a plurality of mobile telecommunications networks  
10 wherein the message processing means comprises a plurality of message processors, one for each telecommunications network carrier used in the system, each network carrier having an associated short message service centre.

22. Apparatus for disseminating information from at least one information source containing data which is updated continuously or at intervals to subscribers of a mobile telecommunications network, comprising service processing means for receiving data from said at least one information source and for accessing a database of stored customer-defined profiles, said service processing means being arranged to process data received from said at least one information source to generate information messages for a particular subscriber in accordance with the 15 customer-defined profile of said subscriber; and message processing means for transmitting the information messages to the subscribers in the form of Short Message Service (SMS) messages for reception by mobile terminals of the subscribers.

23. Apparatus according to claim 22 wherein the apparatus includes timing 25 means and the service processing means is arranged to generate time-dependent information messages for transmission to particular subscribers at predetermined

times or intervals of time in accordance with the customer-defined profile of each particular subscriber.

24. Apparatus according to claim 22 wherein the service processing means is arranged to generate event-dependent information messages for transmission to 5 particular subscribers upon the occurrence of predetermined events which are triggered in accordance with the customer-defined profile of each particular subscriber.

25. Apparatus according to claim 22 wherein the apparatus includes location processing means for processing location signals representing the location of 10 particular subscribers and the service processing means is arranged to generate location dependent information messages for transmission to particular subscribers in accordance with the customer-defined profile of each particular subscriber.

26. Apparatus according to any one of claims 22 to 25 wherein the apparatus includes an interface for receiving requests from subscribers and the service 15 processing means is arranged to generate information messages for transmission in response to a request from a particular subscriber on information from said at least one information source.

27. Apparatus according to any one of claims 22 to 26 wherein the service processing means includes menu-generating means for generating information 20 messages in a menu-driven format.

28. Apparatus according to any one of claims 22 to 27 wherein said service processing means comprises a plurality of service processors to receive data from a corresponding number of information sources.

29. Apparatus according to any one of claims 22 to 28 wherein the or each 25 service processor is connected to a profile management system which includes or

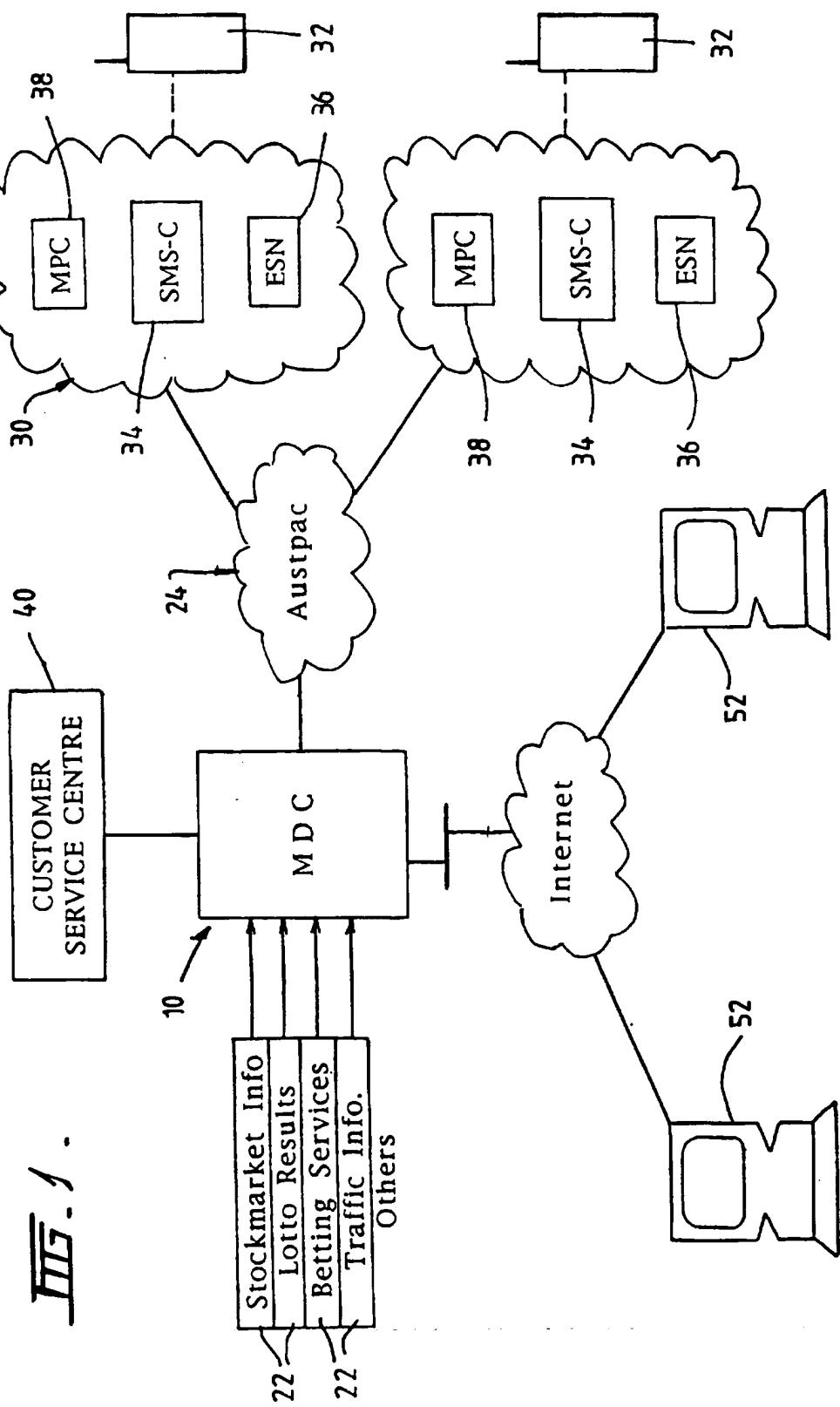
is connected to a customer database containing the customer-defined profiles.

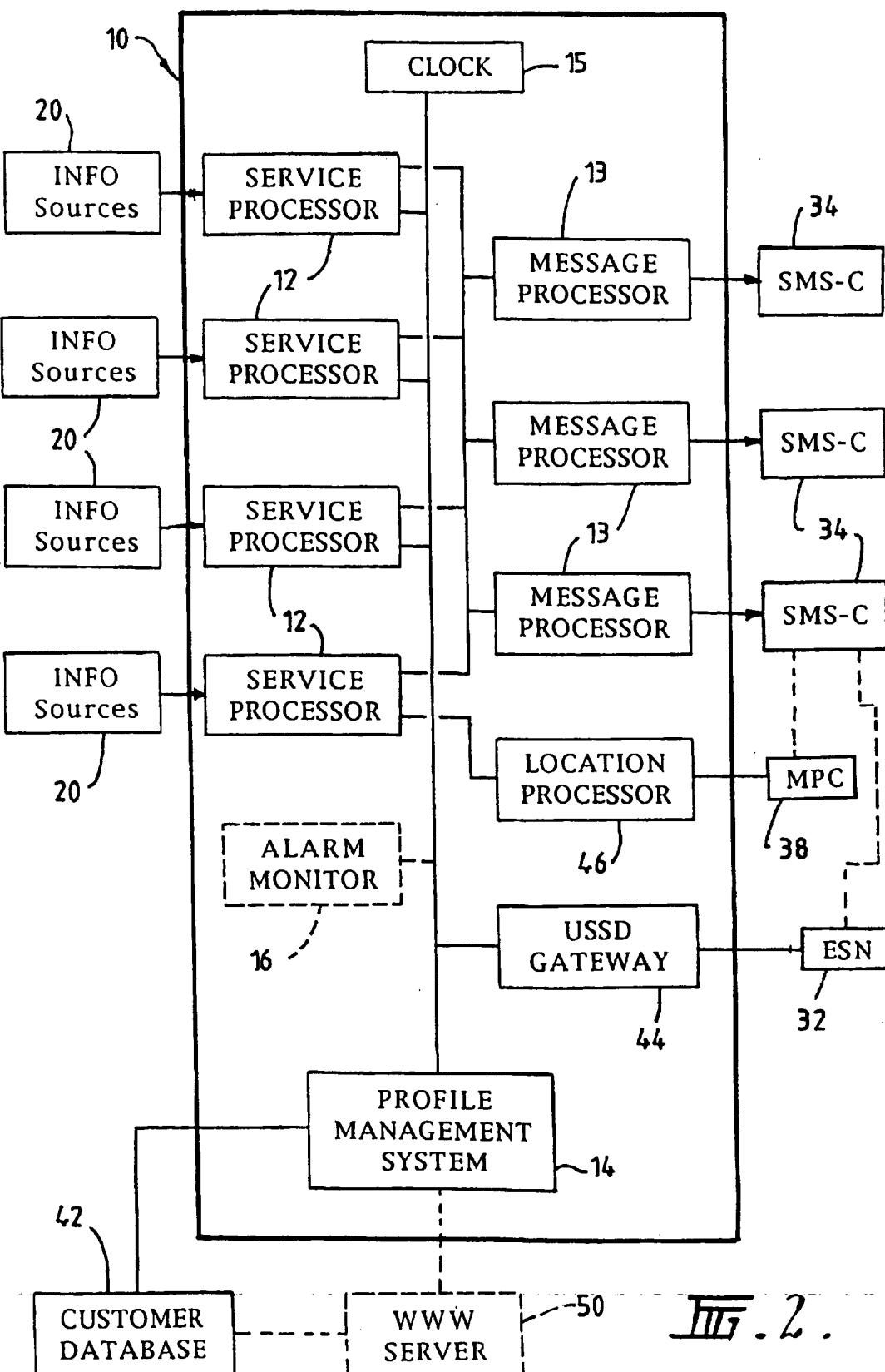
30. Apparatus according to any one of claims 22 to 29 for disseminating information to subscribers of a plurality of mobile telecommunications networks wherein the message processing means comprises a plurality of message processors, 5 one for each telecommunications network carrier.

31. A system for disseminating information from at least one information source containing data to subscribers of a mobile telecommunications network, comprising:  
location determining means for determining the location of mobile terminals of particular subscribers of the network;  
10 a message distribution centre connected to or including at least one information source containing data, wherein the message distribution centre includes service processing means for receiving and processing data from said at least one information source to generate location-dependent messages for particular subscribers in accordance with the location of the particular subscribers; and  
15 message processing means for transmitting the information messages to the subscribers.

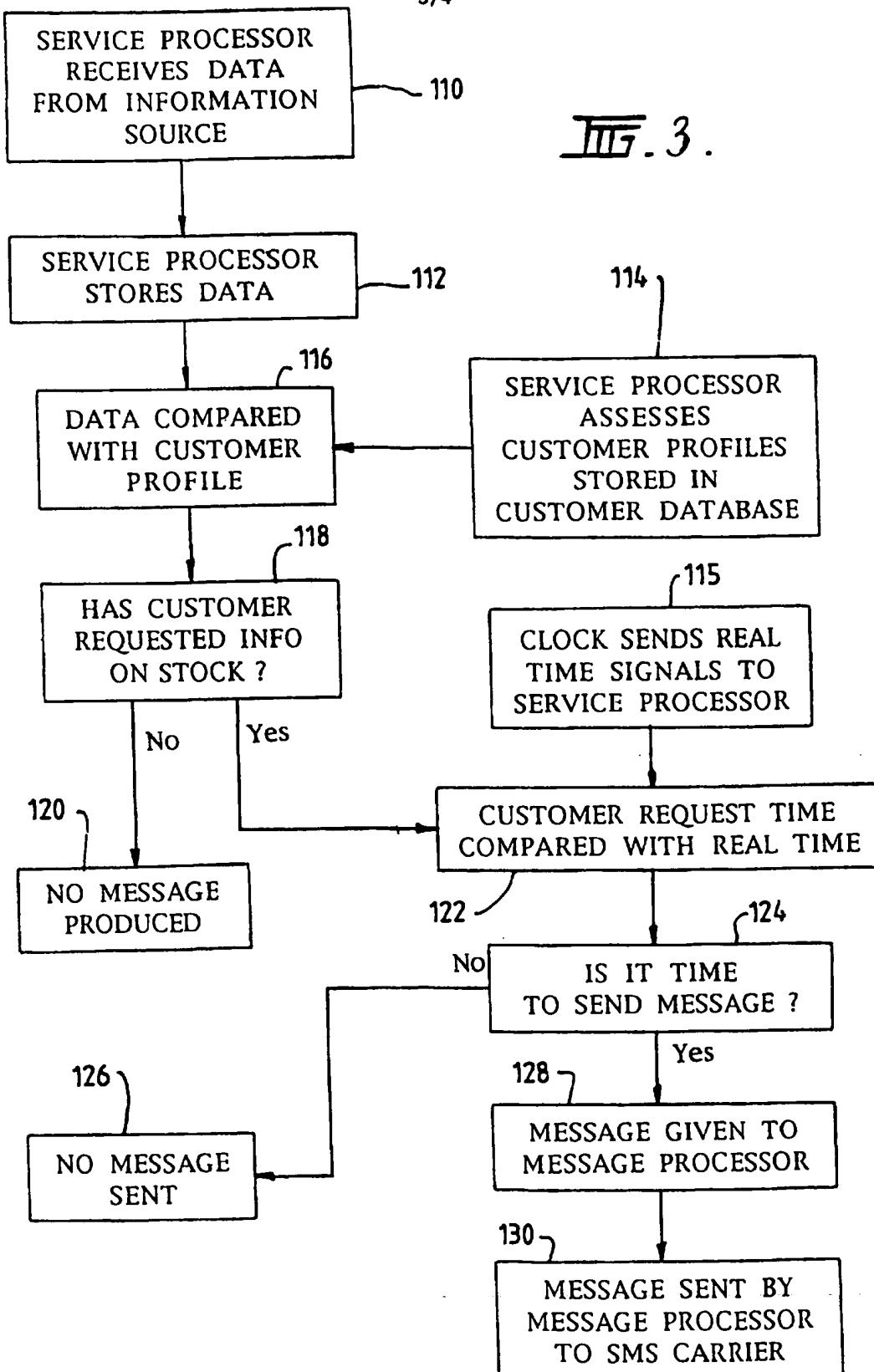
32. A system according to claim 31 wherein the information messages are transmitted in response to requests from particular subscribers on information associated with the location of the particular subscriber at the time the request is 20 made.

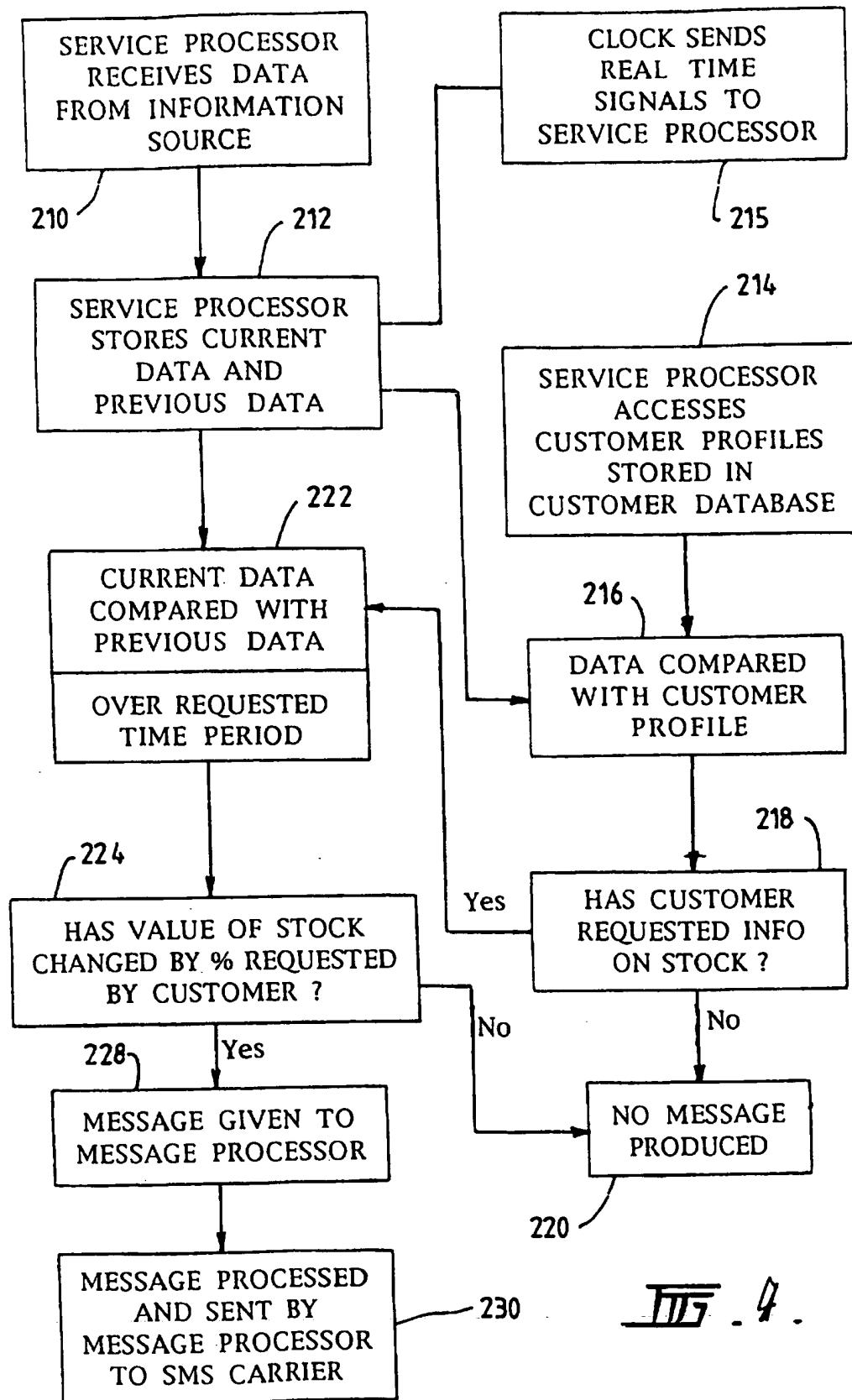
33. A system according to claim 32 wherein the service processing means includes menu-generating means for generating the information messages in a menu-driven format.





3/4





# INTERNATIONAL SEARCH REPORT

International Application No.

PCT/AU 97/00260

## A. CLASSIFICATION OF SUBJECT MATTER

Int Cl<sup>6</sup>: H04H 1/00, 1/08, H04L 12/16, 12/18, H04Q 7/20, H04B 7/26

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC : H04H 1/00, 1/08, H04L 12/16, 12/18, H04M 3/42, 11/08, H04Q 3/64, 7/20, H04B 7/26

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

AU : IPC as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

DERWENT: (message: or information or data) and (distribut: or broadcast: or multicast: or disseminat:) and (user or customer# or subscriber#) and (profile# or schedule#)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 94/30000 A (NEW BRUNSWICK TELEPHONE COMPANY LIMITED) 22 December 1994 Page 11 line 33 - page 20 line 15	1-7, 10-15, 19, 20
X	AU 81845/94 A (AT & T CORP) 13 July 1995 Figure 6, page 6 line 29 - Page 7 line 27, page 10 lines 11-31, the abstract	1, 10
P,X	DE 4440419 A (T. ISSING et al.) 9 May 1996 Column 3 line 5 - column 4 line 7, column 6 lines 30-51	1, 6, 10, 15

Further documents are listed in the continuation of Box C

See patent family annex

• Special categories of cited documents:	
"A" document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"E" earlier document but published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search 20 May 1997	Date of mailing of the international search report 04 JUN 1997
Name and mailing address of the ISA/AU AUSTRALIAN INDUSTRIAL PROPERTY ORGANISATION PO BOX 200 WODEN ACT 2606 AUSTRALIA Facsimile No.: (06) 285 3929	Authorized officer J. LAW Telephone No.: (06) 283 2179

**INTERNATIONAL SEARCH REPORT**  
Information on patent family members

International Application No.  
PCT/AU 97/00260

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report				Patent Family Member			
WO	9430000	AU JP	70653/94 9500500	CA	2125843	EP	709011
AU	81845/94	JP	7221851				
DE	4440419						